

WCG104 Cable Modem

User's Manual

Rev: 1.0

2004/08/20

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Safety Notes

For Installation

- Use only the type of power source indicated on the marking labels.
- Use only the power adapter supplied with the product.
- Do not overload wall outlet or extension cords as this may increase the risk of electric shock or fire. If the power cord is frayed, replace it with a new one.
- Proper ventilation is necessary to prevent the product overheating. Do not block or cover the slots and openings on the device, which are intended for ventilation and proper operation. It is recommended to mount the product with a stack.
- Do not place the product near any source of heat or expose it to direct sunshine.
- Do not expose the product to moisture. Never spill any liquid on the product.
- Do not attempt to connect with any computer accessory or electronic product without instructions from qualified service personnel. This may result in risk of electronic shock or fire.
- Do not place this product on unstable stand or table.

For Using

- Power off and unplug this product from the wall outlet when it is not in use or before cleaning. Pay attention to the temperature of the power adapter. The temperature might be high.
- After powering off the product, power on the product at least 15 seconds later.
- Do not block the ventilating openings of this product.
- When the product is expected to be not in use for a period of time, unplug the power cord of the product to prevent it from the damage of storm or sudden increases in rating.

For Service

Do not attempt to disassemble or open covers of this unit by yourself. Nor should you attempt to service the product yourself, which may void the user's authority to operate it. Contact qualified service personnel under the following conditions:

- If the power cord or plug is damaged or frayed.
- If liquid has been spilled into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally when the operating instructions are followed.
- If the product has been dropped or the cabinet has been damaged.
- If the product exhibits a distinct change in performance.

Warning

- This equipment must be installed and operated in accordance with provided instructions and a minimum 20 cm spacing must be provided between computer mounted antenna and person's body (excluding extremities of hands, wrist and feet) during wireless modes of operation.
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution

- Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

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Before You Use

CHE210W is a DOCSIS 1.0/1.1/2.0 and CableHome 1.0 compliant cable residential gateway that provides high-speed connectivity to residential, commercial, and education subscribers on public and private networks via an existing cable infrastructure. CHE210W is equipped with Ethernet, USB and IEEE802.11g Wireless interfaces. CHE210W uses the advanced PHY (A-TDMA/S-CDMA) technologies to support higher bandwidth in the upstream. CHE210W can inter-operate with any DOCSIS and CableHome compliant headend equipment. It provides access to local area networks and world wide Internet as well as the rich management features of CableLabs CableHome 1.1. The data security secures upstream and downstream communications.

Features

General

- F-Connector for the cable interface
- Four ports 10/100BaseT Ethernet switch with auto-negotiation function and auto-media dependent interface crossover (MDI-II/MDI-X)
- USB Connector for USB 1.1 Network interface
- IEEE802.11g Wireless Access Point
- Clear LED Display
- Plug and Play

CableLabs DOCSIS 1.0/1.1/2.0 Standard Compliant

- Up to 42.88 Mbps downstream and up to 30.72 Mbps upstream
- Frequency agility
- Security with X.509 Authentication / RSA protected Key Exchange / 56 bits DES Data Encryption
- Interoperable with any DOCSIS compatible headend equipment

Two-Way Cable Residential Gateway

- Supports IPv4 Routing
- Supports Network Address Translation of multiple CPE devices (NAT/NAPT)
- ALG supports for over 20 popular applications
- Supports Ports Forwarding and Triggering
- DMZ Hosting
- DHCP Client/Server
- IPSec/L2TP/PPTP pass through
- DNS Proxy
- DNS Server for Private LAN
- Dynamic DNS
- Virtual Servers for Web, FTP, and Mail

Wireless

- Fully 802.11g Compatible
- Fully 802.11b Compatible
- Up to 54 Mbps Data Rate

- Auto Channel Selection (Optional)
- Support Efficient Power Management conforming to IEEE 802.11 Power Saving Mode
- 64/128 bit WEP Encryption for Wireless Security
- Support Wi-Fi Protected Access (WPA)
- IEEE 802.1x Port-Based Authentication with RADIUS Client, support MD5, TLS, TTLS
- Support Authentication: Open System, Shared Key
- Association Control List (ACL) for Wireless Clients Management (Wireless LAN MAC Filtering)

Firewall

- IP Filtering
- Stateful Packet Inspection (SPI)
- Intrusion Detection for Denial of Service (DoS) attacks
- Flexible Parental Control
- URL Content Filtering
- Configurable Access Policy
- Web-Based User Interface Management and Administration
- Remote User Access
- Logging & Alert

CableLabs CableHome 1.1 Standard Compliant

- Support Multiple Provisioning Mode
- Address Portal (CAP) – NAT/NAPT
- Management Portal (CMP)
- DHCP Portal (CDP) – DHCP Client/Server
- Naming Portal (CNP) – DNS
- Testing Portal (CTP) – ICMP & ECHO
- Security Portal (CSP) –Diffie-Hellman / Kerberos Authentication
- CH Firewall Function

Management & Maintenance

- Support Web pages and private DHCP server for status monitoring
- SNMP v1/v2c/v3 Management
- Remote secured operating firmware downloading
- Reset To Default Settings by RESET Push Button
- Syslog (Remote)
- Event Log (Local)

System Requirements

This cable modem equips four ETHERNET ports, wireless and USB interfaces. You can choose either one to connect to the cable modem. Before installing the CABLE MODEM, please check the following requirements with your computer.

For Ethernet Connection

- ◆ Windows 98SE/2000/NT/ME/XP operating system or Apple Macintosh series
- ◆ 10/100 Base-T NIC (network interface card)
- ◆ Subscribe to a Cable Television Company for cable modem service

For USB Connection

- ◆ Windows 98SE/2000/ ME/XP operating system
- ◆ Available USB port
- ◆ Subscribe to a Cable Television Company for cable modem service

For Wireless Connection

- ◆ Windows 98SE/2000/ ME/XP operating system
- ◆ Wireless LAN card
- ◆ Subscribe to a Cable Television Company for cable modem service

Unpacking

Check the contents of the package against the pack contents checklist below. If any of the items is missing, then contact the dealer from whom the equipment was purchased.

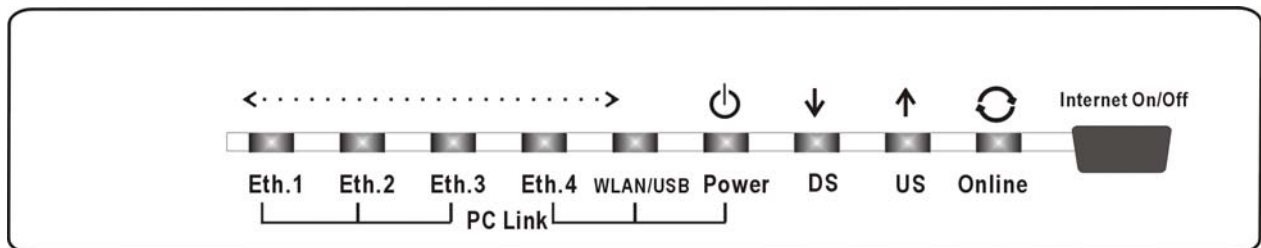
- Cable Modem
- RJ-45Cable
- USB Cable
- Linear Power Adapter
- Quick Start Guide
- Software CD

Chapter 1: Overview

Physical Outlook

Front Panel

The following illustration shows the front panel of the CABLE MODEM machine:



LED Indicators

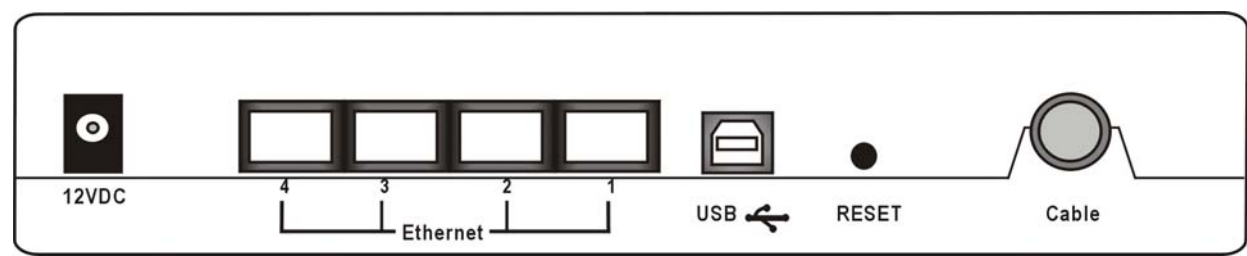
The LEDs on the front panel are described in the table below (from left to right):

LEDs	Color	Active	Description
Eth.1 ~ Eth 4	Green	On	The port is used for connection now.
		Off	The port is not used for the connection.
WLAN/USB	Green	On	802.11g is functional/USB is in function.
		Off	No 802.11g installed or wireless is disabled from WEB/USB is not active.
Power	Green	On	The power is on.
		Off	The power is off.
DS	Green	On	The channel is ready.
		Off	The channel is NOT ready.
		Blinking	Downstream scanning and acquiring SYNC.
US	Green	On	The channel is ready.
		Off	The channel is NOT ready.
		Blinking	Receiving UCD (upstream channel descriptor) to ranging completed from finished SYNC.
Online	Green	Blinking	During executing DHCP, downloading configuration file, registration and so on.
		On	The power is on and the system is initialization.
		Off	During DS scanning and acquiring SYNC. After finishing SYNC, receiving UCD for ranging completed.

Press Button

Internet On/Off Button	Green	On	Internet ON-OFF switch on.
		Off	Internet ON-OFF switch off.

Rear Panel



Connector	Description
12VDC	Power connector
Ethernet 4-1	Ethernet 10/100BaseT RJ-45 connector
USB	USB Connector
Reset	Reset-to-Default push button
CABLE	F-Connector

Chapter 2: Installation

This cable modem equips USB, wireless and Ethernet interfaces. You can choose either one to connect to the cable modem. Go to the section “Installation Procedure for Ethernet Interface”, if your computer has installed TCP/IP and Ethernet card with 10/100BaseT capability. Go to the section “Installation Procedure for USB Interface”, if your PC has USB port and the operating system is Microsoft Windows 98/ME/XP or Windows 2000.

Note: You don't need to do installation for wireless interface.

Installation Procedure for Ethernet Interface

Follow the steps below for proper installation:

1. Connect a coaxial cable (supplied by the local Cable Television Company) to the CABLE connector on the modem.

Note: To speed up the registration process of cable modem, the coaxial cable should be connected to the modem prior to the power connector.

2. Connect the RJ-45 Ethernet cable to one of the **ETHERNET** connector on the modem, connect the other end with the 10/100BaseT Ethernet port on your computer.
3. Plug the power adapter into the **POWER** connector of the modem.
4. Plug the other end of the power adapter into a power outlet.
5. The cable modem will look for the proper cable modem signal in the Cable Television network and process the initial registration. The cable modem is ready for data transfer after the LED “**CABLE**” is in solid green.

Note: The **Reset** button at the rear panel is for maintenance purpose only.

Installation Procedure for USB Interface

Follow the steps below for proper installation:

1. Connect a coaxial cable (supplied by the local Cable Television Company) to the CABLE connector on the modem.

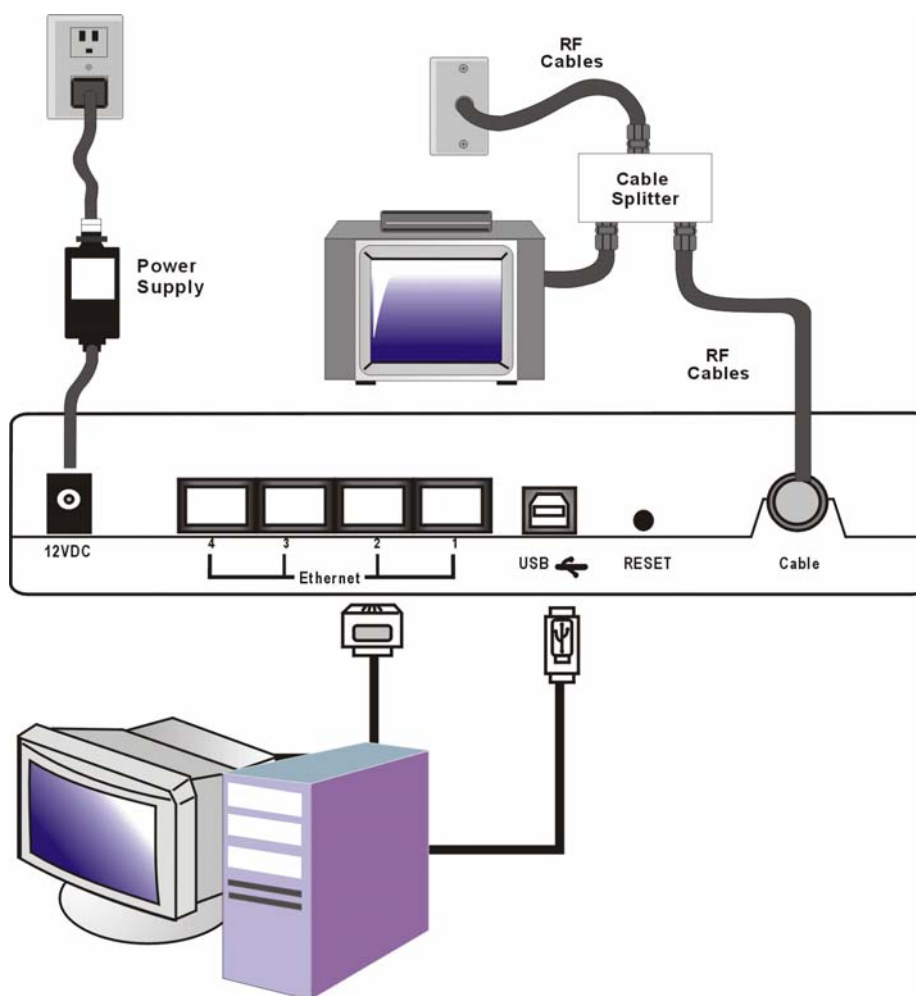
Note: To speed up the registration process of cable modem, the coaxial cable should be connected to the modem prior to the power connector.

2. Connect the USB cable to the **USB** connector on the modem.
3. Plug the power adapter into the **POWER** connector of the modem.
4. Plug the other end of the power adapter into a power outlet.
5. The cable modem will look for the proper cable modem signal in the Cable Television network and process the initial registration. The cable modem is ready for data transfer after the LED "**CABLE**" is in solid green.

Note: The **RST** button at the rear panel is for maintenance purpose only.

Connecting the Cable Modem to Your Computer

Below shows the connection between the Cable Modem and your computer.



Connection

Chapter 3: Software Installation and Configuration

USB Driver Installation

For Windows 98SE/ME

1. Insert the **USB Cable Modem Driver Installation CD** into the CD-ROM drive.
2. Wait for the cable modem is running in the operational state (registration O.K.). Plug the USB cable into your PC USB port. You will see the next page. Click the **Next** button.
3. Select **Search for the best drivers for your device** and click the **Next** button
4. Check **Specify a location** and browse CD-ROM. Click the **Next** button.
5. Select **The updated driver...** and click the **Next** button.
6. Click the **Next** in the Add New Hardware Wizard Window. The Copying files window opens. After 10 to 20 seconds have passed, the Add New Hardware Wizard Windows reopens.
7. Installation has been completed here. Click the **Finish** button.
8. The system will ask you to restart your computer. Click **Yes** to complete the installation.

For Windows 2000

1. Insert the **USB Cable Modem Driver Installation CD** into the CD-ROM drive.
2. Wait for the cable modem is running in the operational state (registration O.K.). Plug the USB cable into your PC USB port. You will see the next page.
3. Click **Next** in the Found New Hardware Wizard window.
4. Select **Search for a suitable driver for my device (recommended)** in the Found New Hardware Wizard window, and then click **Next**.
5. Select **CD-ROM drives** in the Found New Hardware Wizard window, and then click **Next**.
6. Click **Next** in the Found New Hardware Wizard window. The system searches for the driver file for your hardware device.
7. After the system finds the USB driver, the Digital Signature Not Found window opens displaying a confirmation message to continue the installation.
8. Click **Yes** to continue the installation. The Found New Hardware Wizard window reopens with a message that the nstallation is complete.
9. Click **Finish** to close the Found New Hardware Wizard window. The USB drivers are installed on your PC and your USB devices are ready for use.

For Windows XP

1. Insert the **USB Cable Modem Driver Installation CD** into the CD-ROM drive.
2. Wait for the cable modem is running in the operational state (registration O.K.). Plug the USB cable into your PC USB port.
3. Select **Install from a list or specific location (Advanced)** in the Found New Hardware Wizard window, and then click **Next**.

4. Select **Search removable media (floppy, CD-ROM)** in the Found New Hardware Wizard window, and then click **Next**.
5. Click **Continue Anyway** in the Hardware Installation window to continue the installation. The Found New Hardware Wizard window reopens with a message that the installation has finished.
6. Click **Finish** to close the Found New Hardware Wizard window. The USB drivers are installed on your PC and your USB devices are ready for use.

Uninstall USB Driver

For Windows 98SE/ME

1. Click "Start" button on your computer's taskbar, point to "Settings", and then click "Control Panel".
2. Select **Add/Remove Programs**.
3. On the **Install/Uninstall** tab, select **USB Cable Modem Adapter** from the list box. Click the **Add/Remove** button.
4. A confirmation dialog appears. Click **Yes**.
5. A dialog box appears to ask you unplug USB cable, please unplug the cable and click **OK**.

For Windows 2000/XP

1. Click on the **Start** menu, point to **Settings** and click on **Control Panel**.
2. Select **Add/Remove Programs**.
3. Select **USB Cable Modem Adapter** from the list box.
4. Click the **Change/Remove** button.
5. Click **Yes** button.
6. A dialog box appears to ask you unplug USB cable, please unplug the cable and click **OK**.

Setting TCP/IP on Client PC

After you successfully complete the network interface card (Ethernet card) installation task, you need to make sure the TCP/IP communications protocol used by the Ethernet card is installed and correctly configured on your system.

For Windows 98/98SE/ME

1. Click on the **Start** menu, point to **Settings** and click on **Control Panel**.
2. The Control Panel window will show up. Double-click the "Network" icon in the Control Panel window.
3. Windows will appear the Network dialog box. Click "Configuration" tab to bring it to the front, and on this tab, a list of installed network components appears. Look for an entry that includes TCP/IP-> followed by the Ethernet card installed in your computer.
4. The Select Network Component Type dialog box will show up. Click "Protocol", and then click "Add".
5. You will see the Select Network Protocol dialog box. Click "Microsoft" in the "Manufactures:" list, and then click "TCP/IP" in the "Network Protocols:" list. Click "OK".
6. You will be directed back to the Network dialog box, and on the "Configuration" tab, the entry that includes TCP/IP -> followed by the Ethernet card installed in your computer will appear in the list of installed network components.
7. Click TCP/IP -> followed by the Ethernet card installed in your computer, and then click "Properties". The TCP/IP Properties dialog box will appear.
8. In the TCP/IP Properties dialog box, please follow the directions below: Click "IP Address" tab to bring it to the front, and then click "Obtain an IP address automatically" on the tab.

9. Click “Gateway” to bring it to the front. On this tab, leave the “New gateway:” blank. If there is the entry in the “Installed gateway:” list, click it and then click “Remove” to remove all installed gateways.
10. Click “DNS Configuration” tabs to bring it to the front, and click “Disable DNS”, then click “OK” to close the dialog box.
11. The Copying Files dialog box will pop up and the system will start copying files from Windows. At the first time you will be asked to insert the Windows 98 CD-ROM (or diskette) into the CD-ROM drive (or floppy diskette drive) during the files copying, and follow the instructions when they show up, then click “OK”. It will prompt another Copying Files dialog box. Please type the command line that Windows 98/ME files located in the dialog box (For example, D:\win98). Click “OK” to continue the files copying.
12. Windows will appear the System Settings Change dialog box and ask you if you would like to restart your computer. Click “Yes”.

For Windows 2000/XP

1. Click “Start” button on your computer’s taskbar, point to “Settings”, and then click “Network and Dial-up Connections”.
2. The Network and Dial-up Connections window will show up. Double-click “Local Area Connection” icon in the Network and Dial-up Connections window.
3. The Local Area Connection status window will show up. Click the “Properties” button.
4. Click “Internet Protocol (TCP/IP)” and then click “Properties”.
5. The Internet Protocol (TCP/IP) Properties dialog box appears. Click “Obtain an IP address automatically”. Click “Obtain DNS server address automatically”. Click “OK” to close the dialog box.
6. Windows will appear the System Settings Change dialog box and ask you if you would like to restart your computer. Click “Yes”.

DHCP Server

PC connected to the cable modem can automatically get a private IP address from the DHCP server of cable modem before cable modem is on line. The following steps will show you how to get an IP address from DHCP server of cable modem before cable modem is on line.

For Windows 98/98SE/ME

1. Click “Start”, point to “Run”, and click to open the “Run” windows.
2. Enter “winipcfg” in the “Open” field. Click “OK” to execute the winipcfg and show the “IP Configuration” window.
3. Select the “Ethernet adapter” to show the IP address. Press “Release” and “Renew” if the PC is not accessing the Internet. After the cable modem is on line, you need to press the “Release” and “Renew” to get a new IP address from your ISP’s server.

For Windows 2000/XP

1. Click “Start”, point to “Run”, and click to open the “Run” windows.
2. The Run dialog box appears. Type “cmd” in the “Open” field, and then click “OK” to execute the command.
3. You will enter the dos mode, type “ipconfig”, press “Enter” on your keyboard, and you will see the IP address your computer get from the cable modem.
4. If PC is not access Internet, type “ipconfig /release”, and press “Enter” on your keyboard to release the IP.
5. Type “ipconfig /renew”, and press “Enter” on your keyboard to renew the IP. You can repeat the steps until your computer gets the correct IP.

For Apple Macintosh

1. Click “Apple menu”, point to “Control Panels”, and click “TCP/IP” to open the “TCP/IP” window.
2. If the iMac gets an invalid IP, select “Using DHCP Server” in “Configure” field. Click the “Close box” at the upper left corner to close the “TCP/IP” window.

3. Click the "Save" in the prompted message box.
4. You need to wait about 2 minutes and open "TCP/IP" window to see the new TCP/IP status.

Renew PC IP Address

There is a chance that your PC does not renew its IP address after cable modem is on line and the PC cannot access the Internet. Please follow the procedures below to renew PC's IP address after the cable modem is on line.

1. Click "Start", point to "Run", and click to open the "Run" windows.
2. Enter winipcfg in the "Open" field. Click "OK" to execute the winipcfg and show the "IP Configuration" window.
3. Select the "Ethernet adapter" to show the IP address. Press "Release" and "Renew" to get a new IP address from your ISP's server.
4. Select the "OK" to close the IP Configuration window.

Chapter 4: Access Internet through Cable Modem

For making sure that you can get into Internet successfully, please make sure the following first.

1. Make sure the connection (through Ethernet or USB) between the cable modem and your computer is OK.
2. Make sure the TCP/IP protocol is set properly.
3. Subscribe to Cable Television Company.

Accessing Internet

Once your host PC is properly configured, please proceed as follows:

1. Start your web browser and type the private IP address of the ADSL Router in the URL field: **192.168.0.1**.
2. After connecting to the device, you will be prompted to enter username and password. By default, the username is **cablelabs** and the password is **admin**.

If you login successfully, the main page will appear. From now on the this cable modem acts as a web server sending HTML pages/forms on your request. You can fill in these pages/forms and apply them to the device.

Outline of Web Manager

The main screen will be shown as below.

The screenshot displays the Thomson cable modem web manager interface. The top navigation bar has two tabs: 'Status' (selected) and 'Wireless'. On the left, there is a sidebar with the Thomson logo and three buttons: 'Software', 'Connection' (highlighted in yellow), and 'Password'. The main content area is titled 'Status' and contains a 'Connection' section with a description: 'This page displays information on the status of the cable modem's HFC and IP network connectivity.' Below this, there are three tables: 'Startup Procedure', 'Downstream Channel', and 'Upstream Channel'.

Startup Procedure			
Procedure	Status	Comment	
Acquire Downstream Channel	In Progress		
Connectivity State	In Progress	Not Synchronized	
Boot State	In Progress	Unknown	
Configuration File			
Security	Disabled	Disabled	

Downstream Channel			
Lock Status	Not Locked	Modulation	unknown
Channel ID	0	Symbol rate	Unknown
Downstream Frequency		Downstream Power	-21.9 dBmV
SNR	23.4 dB		

Upstream Channel			
Lock Status	Not Locked	Modulation	QPSK
Channel ID	0	Symbol rate	0 Ksym/sec
Upstream Frequency		Upstream Power	8.3 dBmV

Title: It indicates the title of this management interface.

Main Menu: Includes Status and Wireless.

Main Window: It is the current workspace of the web management, containing configuration or status information.

Status

Software

This page shows the software information containing the standard specification compliant, software version,

The screenshot shows the Thomson Status page. The left sidebar has a 'Status' tab selected and three buttons: 'Software' (highlighted), 'Connection', and 'Password'. The main content area is titled 'Status' and 'Software', with a description: 'This page displays information on the current system software.' Below this is a table of system information.

Information	
Standard Specification Compliant	DOCSIS 2.0
Hardware Version	4.0
Software Version	ST5A.01.01
Cable Modem MAC Address	00:90:64:ed:cc:cb
Cable Modem Serial Number	00800418600030
CM certificate	Installed

Status	
System Up Time	0 days 00h:09m:13s
Network Access	Denied
Cable Modem IP Address	0.0.0.0

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Connection

This page shows current connection status containing security, boot state, configuration file, downstream channel, lock status, SNR, channel ID, upstream frequency and so on.

The screenshot shows the Thomson Status page with the 'Connection' tab selected. The left sidebar has three buttons: 'Software', 'Connection' (highlighted), and 'Password'. The main content area is titled 'Status' and 'Connection', with a description: 'This page displays information on the status of the cable modem's HFC and IP network connectivity.' Below this are three tables showing connection details.

Startup Procedure		
Procedure	Status	Comment
Acquire Downstream Channel	In Progress	
Connectivity State	In Progress	Not Synchronized
Boot State	In Progress	Unknown
Configuration File		
Security	Disabled	Disabled

Downstream Channel			
Lock Status	Not Locked	Modulation	unknown
Channel ID	0	Symbol rate	Unknown
Downstream Frequency		Downstream Power	-21.9 dBmV
SNR	23.4 dB		

Upstream Channel			
Lock Status	Not Locked	Modulation	QPSK
Channel ID	0	Symbol rate	0 Ksym/sec
Upstream Frequency		Upstream Power	8.3 dBmV

Password

This page allows you to change the user name and password for access into this web page for next time.

User Name: Type in the new user name in this field.

Password: Type in the new password in this box.

Re-Enter Password: Type in the new password again for confirmation.

Restore Factory Defaults: If you want to restore the factory settings, click **Yes** and **Apply**. If not, click **No** and **Apply**.

The screenshot shows the Thomson web interface. At the top, there are tabs for 'Status' (highlighted) and 'Wireless'. On the left, there is a sidebar with the Thomson logo and three buttons: 'Software', 'Connection', and 'Password' (highlighted). The main content area is titled 'Status' and contains a section for 'Password'. Below the title, there is a description: 'This page allows configuration of administration access privileges and the ability to restore factory defaults to the system.' The form includes three input fields: 'User Name' (containing 'cablelabs'), 'Password' (masked with asterisks), and 'Re-Enter Password' (masked with asterisks). Below these fields is a radio button group for 'Restore Factory Defaults' with options 'Yes' and 'No' (selected). An 'Apply' button is at the bottom of the form. At the bottom of the page, there is a copyright notice: '© 2004 Thomson Inc. All rights reserved.'

Wireless

Basic

To set the basic configuration for the wireless features, please click **Basic** item from the **Wireless** menu.

Interface:

Choose Enabled to enable the basic setting. Choose Disabled to close the basic setting.

Network Name(SSID):

The SSID will be displayed automatically.

Closed Network:

Choose **Open** to open the network, choose **Closed** to close the network.

The screenshot shows the Thomson web interface for the 'Wireless' section. At the top, there are tabs for 'Status' and 'Wireless' (highlighted). On the left, there is a sidebar with the Thomson logo and four buttons: 'Basic' (highlighted), 'Security', 'Access Control', and 'Advanced'. The main content area is titled 'Wireless' and contains a section for '802.11b/g Basic'. Below the title, there is a description: 'This page allows configuration of the Access Point parameters, including the SSID and channel number.' The form includes several settings: 'Interface' (a dropdown menu set to 'Enabled'), 'Network Name (SSID)' (a text field containing 'THOM292.30'), 'Closed Network' (a dropdown menu set to 'Closed'), 'New Channel' (a dropdown menu set to '1'), 'Current Channel' (a text field containing '1'), 'Network Authentication' (a text field containing 'No Authentication'), and 'Data Encryption Mode' (a text field containing 'No Encryption'). An 'Apply' button is at the bottom of the form. At the bottom of the page, there is a copyright notice: '© 2004 Thomson Inc. All rights reserved.'

Interface

A close-up of the 'Interface' dropdown menu. The menu is open, showing three options: 'Enabled' (selected), 'Enabled', and 'Disabled'.

New Channel:

There are 11 channels that you can choose. Choose the one that is suitable for this device.

Current Channel:

The channel that you choose will be displayed in this field.

Network Authentication:

It shows the status of the network authentication. For the basic settings, there is no network authentication adapted.

Data Encryption Mode:

It shows the data encryption mode. For the basic settings, there is no data encryption mode selected.

Security - Disabled

For the disabled network Authentication, the settings that you can adjust including Data Encryption, Shard Key Authentication, PassPhrase, Network Key 1-4 and Current Network Key.

Data encryption:

Select the WEP mode for the WEP key function. You can choose **64-bit** or **128-bit** for your necessity. If you choose **Off**, the Encryption Keys will not be shown on this page. If selected, data is encrypted using the key before being transmitted. For example, if you set 128-bit in this field, then the receiving station must be set to use 128 Bit Encryption, and have the same Key value too. Otherwise, it will not be able to decrypt the data.

Shard Key Authentication:

The ADSL Router supports two authentication types: **Open System** or **Shared key**, and **Shared Key**. This should be considered with the WEP (Wired Equivalent Privacy) mechanism.

PassPhrase:

You can type in ASCII codes into this field. The range is from 8 characters to 64 characters. **For ASCII characters, you can type in 63 characters in this field. If you want to type in 64 characters, only hexadecimal characters can be used.**

Generate WEP Keys:

Click this button to generate the PassPhrase.

Network Key 1 to 4:

Closed Network

Closed

Open

Closed

New Channel

1

1

2

3

4

5

6

7

8

9

10

11

Wireless

802.11b/g Privacy

This page allows configuration of the WEP keys and/or passphrase.

Network Authentication

Disabled

WPA Pre-Shared Key

WPA Group Rekey Interval

3

RADIUS Server

0.0.0.0

RADIUS Port

1812

RADIUS Key

Data Encryption

WEP (64-bit)

Shared Key Authentication

Open System or Shared Key

PassPhrase

Generate WEP Keys

Network Key 1

Network Key 2

Network Key 3

Network Key 4

Current Network Key

1

Apply

Data Encryption

WEP (64-bit)

Off

WEP (64-bit)

WEP (128-bit)

Authentication

Open System or Shared Key

Open System or Shared Key

Shared Key

PassPhrase

22

Generate WEP Keys

Network Key 1

11c5a112e0

Network Key 2

8420a34166

Network Key 3

abb43f1bc0

Network Key 4

147c8a3c84

Current Network Key

1

Apply

Current Network Key

1

1

2

3

4

Type the encryption key length and fill out WEP keys. The system allows you to type in 4 kinds of the WEP key. For **64-bit** WEP mode, the number you can type is that 5 characters or 10 hexadecimal digits. As for **128-bit** WEP mode, the number you can type is that 13 characters or 26 hexadecimal digits.

Current Network Key:

Select one of network key (from 1 to 4) that you set on the Key boxes as default one.

Security – 802.1X

For the 802.1x network Authentication, the settings that you can adjust including RADIUS Server, RADIUS Port, and RADIUS Key.

RADIUS Server: RADIUS Server is a protocol for carrying authentication, authorization, and configuration information between a Network Access Server which desires to authenticate its links and a shared Authentication Server. Please type in the IP Address for the RADIUS Server.

RADIUS Port: Except for the IP address of the RADIUS Server, you have to enter the port number for the server. Port 1812 is the reserved RADIUS-authentication port described in RFC 2138. Earlier AP (RADIUS clients) use port 1945. The default value will be shown on this box. You can keep and use it.

RADIUS Key: A RADIUS Key is like a password, which is used between IAS and the specific RADIUS client to verify identity. Both IAS and the RADIUS client must be use the same RADIUS Key for successful communication to occur. Type in the words for the RADIUS Key.

Network Authentication	802.1x
WPA Pre-Shared Key	
WPA Group Rekey Interval	0
RADIUS Server	0.0.0.0
RADIUS Port	1812
RADIUS Key	

Security - WPA

For the WPA network Authentication, the settings that you can adjust including WPA Group Rekey Interval, RADIUS Server, RADIUS Port, RADIUS Key and Data Encryption.

WPA Group Rekey Interval: Type in the time for the WAP group rekey interval. The unit is second.

RADIUS Server: RADIUS Server is a protocol for carrying authentication, authorization, and configuration information between a Network Access Server which desires to authenticate its links and a shared Authentication Server. Please type in the IP Address for the RADIUS Server.

RADIUS Port: Except for the IP address of the RADIUS Server, you have to enter the port number for the server. Port 1812 is the reserved RADIUS-authentication port described in RFC 2138. Earlier RADIUS clients use port 1945. The default value will be shown on this box. You can keep and use it.

RADIUS Key: A RADIUS Key is like a password, which is used between IAS and the specific RADIUS client to verify identity. Both IAS and the RADIUS client must be use the same RADIUS Key for

Network Authentication	WPA
WPA Pre-Shared Key	
WPA Group Rekey Interval	0
RADIUS Server	0.0.0.0
RADIUS Port	1812
RADIUS Key	
Data Encryption	AES

successful communication to occur. Type in the words for the RADIUS Key.

Data Encryption: Select the data encryption for the WPA mode. There are three types that you can choose, TKIP, AES, TKIP+AES.

TKIP takes the original master key only as a starting point and derives its encryption keys mathematically from this mater key. Then it regularly changes and rotates the encryption keys so that the same encryption key will be never used twice.

AES provides security between client workstations operating in ad hoc mode. It uses a mathematical ciphering algorithm that employs variable key sizes of 128, 192 or 256 bits.

TKIP+AES combines the features and functions of TKIP and AES.

After finished settings, click **Apply** for activation.

Data Encryption **AES**

Security – WPA-PSK

For the WPA-PSK network Authentication, the settings that you can adjust including WPA Pre-Shared Key, WPA Group Rekey Interval, and Data Encryption.

WPA Pre-Shared Key: Please type the key to be between 8 and 63 characters, or 64 hexadecimal digits. Only the devices with a matching key that you set here can join this network.

WPA Group Rekey Interval: Type in the time for the WAP group rekey interval. The unit is second.

Data Encryption: Select the data encryption for the WPA mode. There are three types that you can choose, TKIP, AES, TKIP+AES.

After finished settings, click **Apply** for activation.

Network Authentication

WPA Pre-Shared Key

WPA Group Rekey Interval

RADIUS Server

RADIUS Port

RADIUS Key

Data Encryption

Access Control

It allows you to set control to the AP and the connected clients.

MAC Restrict Mode:

Click Enabled to enable this function; click Disabled to close this function.

MAC Address:

Type in the MAC address of the AP or connected clients into this field, then click Apply to add it as an allowed or denied device.

Connected Clients:

The information of connected clients will be displayed in this field if its MAC address is typed above.

Wireless

802.11b/g Access Control

This page allows configuration of the Access Control to the AP as well as status on the connected clients.

MAC Restrict Mode

MAC Addresses

<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

Connected Clients

Host Name	IP Address	Client ID
No wireless clients are connected.		

Advanced

The Advanced wireless setting allows you to configure the data rates and WiFi thresholds.

Basic Rates:

Choose **Minimal** or **All** as the basic rates.

Supported Rates:

Choose **Minimal** or **All** as the supported rates.

Beacon Interval:

Set the period of beacon transmissions to allow mobile stations to locate and identify a BSS. The measure unit is “time units”(TU) of 1024 microseconds.

DTIM Interval:

The value you set here are used to inform mobile stations when multicast frames that have been buffered at the router will be delivered and how often that delivery will happen.

Fragmentation Threshold:

Set the number of the fragmenting frames to make the data be delivered without errors induced by the interference.

Frames longer than the value you set here are fragmented prior to the initial transmission into fragments no longer than the value of the threshold.

RTS Threshold:

Set the value for sending a request to the destination. All the frames of a length greater than the threshold that you set here will be sent with the four-way frame exchange. And, a length less than or equal to the value that you set will not be preceded by RTS.

54g Mode:

There are five wireless modes for you to choose, please check the specification of your wireless card and choose a proper setting.

54g Protection:

Select Off to have none protection; select Auto to open the 54g protection.

Xpress Technology:

Click Enabled to enable this function; click Disabled to close this function.

Rate:

It decides the speed of data transmission. There are several rates provided here for you to choose. Choose any one of it by using the drop-down menu.

Output Power:

This setting decides the output power of this device.

Wireless

802.11b/g Advanced

This page allows configuration of data rates and WiFi thresholds.

Basic Rates

Supported Rates

Beacon Interval ms (1..65535)

DTIM Interval ms (1..255)

Fragmentation Threshold bytes (256..2346)

RTS Threshold (0..2347)

54g™ Mode

54g™ Protection

XPress™ Technology

Rate

Output Power

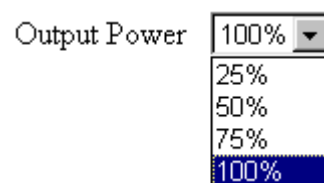
Basic Rates

Supported Rates

54g™ Mode

54g™ Protection

Rate



Chapter 5: Troubleshooting

If the suggested solutions in this section do not resolve your issue, contact your system administrator or Internet service provider.

Can I use the same cable line for TV and cable modem?

- A. Yes, the TV and cable modem uses the cable line. You need a splitter to use them at the same time. Ask Cable Company to install the splitter for you to avoid signal degradation.

My cable modem cannot get a solid green light on the Status LED when I connect the cable back.

- A. The cable modem lost the signal during the disconnection period and it will keep scanning other available signal. When you connect the cable back, it might take a while to find the correct channel. You can power cycle the modem to speed up the process since the modem will remember the channel last time and it will start from that channel at startup.

Which port of the Ethernet hub should I connect to the modem if I need to connect multiple PC to the modem?

- A. You should connect the modem to the up-link port of the hub. The link LED of the hub will be on.

How do I see my IP address?

- A. If you are using Windows 95/98/ME, the winipcfg command will show you the IP address of the PC connected to the cable modem. Notice that even though you seem to get the same address all the time, it may still be a dynamic address.

Can I just connect the cable modem and two computers to a hub?

- A. Yes. You need to make sure you can get two IP addresses from your cable modem service provider. Connect the modem to the up-link port of the hub.

I have a cable modem. How can I make it work?

- A. Basically, modem is plug and play. You can just connect the modem and you are ready to go if you have the subscription. For ensure good signal for your cable modem, you should ask your cable provider to install the cable modem for you.

Can I switch between a notebook and PC using the same cable modem? Will there be a problem to obtain a DHCP IP address?

- A. This issue depends on how your cable modem service provider manages the modems. If you are using one of the cable modem service providers that register your PC based on the MAC address of the Ethernet card in the PC, then you will have to call them and have them change that entry every time you switch between the two. Ask them if you have a problem on this issue.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

Industry Canada Statement

Operation is subject to the following two conditions:

- 1) this device may not cause interference and
- 2) this device must accept any interference, including interference that may cause undesired operation of the device

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.